Division File

Illinois Environmental Protection Agency · P.O. Box 19276, Springfield, IL 62794-9276

0316000067--Cook
Paxton Ave Lagoons/Chicago
Superfund/Health Report

Memorandum

Date: October 22, 1990

To: Jim Janssen

From: Jim Buckert JWB

Subject: Tier II Review of Metal Emissions from the Paxton Incinerator

Attached are the results of our Tier II review of metal emissions from the Paxton Incinerator. Throughput and emissions data were obtained or calculated from the document, "Summary Report for Trial Burn Program for a Transportable Incinerator System (TIS) at the Paxton Avenue Lagoons Site" which was submitted by Weston. Specifically, data were used from Tables 1-2, 5-5, and 5-6 of the referenced document. The Tier II review was performed in accordance with the USEPA document, "Guidance on Metals and Hydrogen Chloride Controls for Hazardous Waste Incinerators" as revised on September 26, 1989.

The USEPA guidance document requires that the ratio of actual risk divided by 10^{-5} for each emitted metal carcinogen be less than 1. In addition, the sum of these ratios must also be less than 1. As indicated in Table 3, all metal carcinogen emissions meet these criteria at the throughput rates indicated in Table 2.

For non-carcinogenic metals, the guidance document requires the ratio of the modeled annual concentrations divided by the Reference Air Concentrations to be less than 1. Table 4 shows this criterion is met for all non-carcinogenic metal emissions at the throughput rates indicated in Table 2.

cc: Bharat Mathur
Harish Desai
Pat Dennis
Jim Cobb
Permit File No. 031600FII, ID No. 89010073

Table 1
Incinerator Parameters Used
In The Tier II Analyses

Stack Height	15.2 m
Exhaust Temperature	432 ^{o}K
Inner Stack Diameter	.76 m
Exit Velocity	14.6 m/s actual
Flow Rate	6.7 m^3/s actual
Distance to Fenceline	30 m
Dispersion Factor (DC)	168.5
LT/ST Ratio (R)	.028
Generic Source Number	5

Table 2
Metal Feed Rates, Emission Rates, and Modeled Concentrations

	Metal	Measured Throughput (lb/hr)	Measured Emission Rate (lb/hr)	Modeled Annual Concentration (ug/m^3)
1.	Antimony	1.1×10^{-1}	$< 6.2 \times 10^{-5}$	3.7×10^{-5}
2.	Arsenic	7.0×10^{-2}	$< 7.2 \times 10^{-4}$	4.2×10^{-4}
3.	Barium	4.0×10^{-0}	$< 7.2 \times 10^{-4}$	4.2×10^{-4}
4.	Beryllium	7.1×10^{-3}	$< 1.7 \times 10^{-5}$	1.0×10^{-5}
5.	Cadmium	4.1×10^{-2}	1.4×10^{-4}	8.0×10^{-5}
6.	Chromium	2.2×10^{-0}	8.0×10^{-5}	4.7×10^{-5}
7.	Lead	$1.4 \times 10^{+1}$	1.9×10^{-2}	1.1×10^{-2}
8.	Mercury	1.1×10^{-3}	4.7×10^{-4}	2.8×10^{-4}
9.	Silver	----------	$< 5.0 \times 10^{-5}$	3.0×10^{-5}
10.	Thallium	----------	$< 7.2 \times 10^{-4}$	4.2×10^{-4}

Table 3
Tier II Review Of Metal Carcinogens

	Metal	Unit Risk	Actual Risk	Actual Risk / 10^{-5}
1.	Antimony			
2.	Arsenic	4.3×10^{-3}	1.8×10^{-6}	1.8×10^{-1}
3.	Barium			
4.	Beryllium	2.4×10^{-3}	2.4×10^{-8}	2.4×10^{-3}
5.	Cadmium	1.8×10^{-3}	1.4×10^{-7}	1.4×10^{-2}
6.	Chromium	1.2×10^{-2}	5.6×10^{-7}	5.6×10^{-2}
7.	Lead			
8.	Mercury			
9.	Silver			
10.	Thallium			

			Total Ratio =	2.5×10^{-1}

Table 4
Tier II Review Of Non-Carcinogenic Metals

	Metal	Reference Air Concentration (ug/m^3)	Modeled Conc. / RAC
1.	Antimony	3.0×10^{-1}	1.2×10^{-4}
2.	Arsenic		
3.	Barium	$5.0 \times 10^{+1}$	8.4×10^{-6}
4.	Beryllium		
5.	Cadmium		
6.	Chromium		
7.	Lead	9.0×10^{-2}	1.2×10^{-1}
8.	Mercury	3.0×10^{-1}	9.3×10^{-4}
9.	Silver	3.0×10^{-0}	1.0×10^{-5}
10.	Thallium	3.0×10^{-1}	1.4×10^{-3}